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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/817,547
Filing Date: March 26, 2001
Appellant(s): COK, RONALD S.

Andrew J. Anderson
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on July 28, 2005 appealing from the Office action mailed January 25, 2005.

1. Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

2. Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

3. Status of Claims

The statement of the status of claims contained in the brief is correct.

4. Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

5. Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

6. **Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

7. Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

8. **Evidence Relied Upon**

6,081,073	Salam	06-2000
6,414,661 B1	Shen et al	07-2002
6,097,360	Holloman	08-2000

9. Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Salam (U.S. Patent No. 6,081,073) in view of Shen et al et al (U.S. Patent No. 6,414,661 B1)).

As to claim 1, Salam discloses a dynamic controller for light emitting active matrix display, the display being responsive a code value (e.g., 256 value) for producing a light output (see column 3, line 30 through column 4, line 19). Salam teaches a photosensor located on the display for sensing the light output from the display (see column 5, lines

20-24) and generating a feedback signal (i.e. analog signal outputted from camera 21 or photosensor) representing thereof (see column 3,lines 58 through column 4, line 11). Salam teaches a feedback signal converter (A/D converter 22) for converting the feedback signal to a converted feedback signal (i.e. digital signal brightness reading for the lamp outputted from A/D converter 22). Salam teaches a code value corrector (microprocessor 3, memory H) including a memory (memory location H) responsive to a code value (256 value) for producing a corrected code value (i.e. G value); see column 4, lines 1-35.

Salam does not mention an update calculator for creating an updated corrected value by combining the converted feedback signal with the corrected code value and storing the updated corrected code value in the memory. In same view of endeavor (using photosensor for sensing the light output from the display; see column 8, line 64 through column 9,line 16), Shen teaches an update calculator (16-18) for creating an update corrected code (i.e. digital value of the current I_{N+1} stored in RAM 20) by combining the converted feedback signal (e.g., $I_0\tau_0$ generated by CCD camera; see column 3, lines 4-12) with the corrected code value (I_N) , and storing the updated corrected code value (I_{N+1}) in the memory (see column 3, lines 1-12 , column 6, lines 16-39, column 7, lines 9-15). Shen teaches a feedback loop providing converted feedback signal (e.g., $I_0\tau_0$) generated by a sensor (e.g., CCD camera) on the display device to update a corrected code value (I_N to I_{N+1}) as the same way as applicant's disclosed device (see Figure 2 of Shen). Therefore, it would have been obvious to one of ordinary skill in the art at the invention was made to have used the update calculator

of Shen to the microprocessor of Salam because the update calculator of Shen provides rapidly and accurately correct resulting non uniformities of an initially calibrated display during its life (see column 2, lines 48-56 of Shen).

As to claim 2, Salam teaches that "transfer of the G values can be recording them on a medium which is subsequently read into memory H"; see column 4, lines 36-44. Thus, there are two memory one is medium memory and another one is memory H. The computer (i.e. code value corrector) computes the G value then recording them to the medium before reading into the memory H. The "medium" of Salam clearly reads on the claimed an immediate memory for receiving and storing corrected data signal from the data signal corrector as recited in the claim.

As to claim 3, Salam teaches that "in this case each lamp in turned on with photocell receiving light from it and the digital reading for the lamp light is recorded in microprocessor memory"; see column 5, lines 20-24. Thus, the microprocessor memory reads on intermediate memory for receiving and storing converted feedback signal (digital signal) from the feedback signal converter (22) as recited in the claim.

As to claim 4, Salam clearly teaches the feedback signals (i.e. analog signal outputted from camera 21 or photosensor) being an analog current signal and the converted feedback signal (digital signal outputted from A/D 22) being a digital code value.

As to claim 5, converting the digital signals to analog signals prior to applying the code value signals to the display device is well-known in the art as taught by Shen as shown in element 14.

As to claim 6, Salam clearly teaches the code values being supplied to the display as digital signals (i.e. analog signals are converted into digital signal by A/D converter 22).

As to claims 7-8, Salam teaches that "each lamp in turned on with the photocell receiving light from it" (see column 5, lines 21-25). This reads on a photosensor for each display pixel .

As to claim 9, Salam clearly teaches means for sending every code to the representative pixel and producing a corrected code value for every code value; see column 5, lines 25-40.

As to claim 10, Salam teaches that the lamps of the instrument panel may be of different groups each group having its lamps set to a brightness particular to the group (see column 7,lines 8-29). This reads on the claimed "partition into multiple units" as recited in the claim, even well-known in the art as admitted by applicant on page 7,lines 14-17 of the specification.

As to claims 11-12, Salam clearly teaches color display device as recited in the claim; see column 7, line 39 through column 8, line 40.

As to claim 13, the claimed "color transformation" is broad enough to read on the color correction as taught by Salam.

As to claim 14-15, Salam teaches a global display attribute ambient illumination; see column 5, lines 45-55 and column 6,lines 58-66.

As to claims 16-17, Salam clearly teaches pixel specific display attribute and position specific display attribute as broad claimed languge. That is Salem's device can change the brightness of the specific pixel at certain or desired position on the screen.

As to claim 18, the G values for the lamp of Salam are updated depending on the brightness of the lamp and the G values are stored in the memory H. This reads on the claimed limitation updating the memory upon start-up as recited in the claim.

12. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Salam in view of Shen, as applied to claim 1 and further in view of Holloman (U.S. Patent No. 6,097,360).

As to claim 19, note the discussion of Salam and Shen above, Salam and Shen do not mention the controller and the display device integrated on a common substrate. Holloman teaches that the analog drivers, the control counters, decoders, and video drivers are intended to be built on a common substrate using conventional TFT construction on glass, ceramic or a metal substrate as desired with the light emitting devices... (see column 4, lines 22-33). Therefore, it would have been obvious to one of ordinary skill in the art at the invention was made to have used the common substrate as taught by Holloman to accommodate the controller and the display device of Salam as modified by Shen so that the display device is more compact.

13. **Response to Argument**

On page 3, second paragraph, Appellant argues that" Shen does not combine a feedback signal from the display with a corrected output signal for form a new signal,

as there is no feedback loop based on actual display light emission which enables compensating for actual changes in the display performance over time". However, examiner would like to present his point of view as follows:

First, Appellant does not take into consideration column 8, lines 64-68 of Shen (using CCD camera for measuring the light output of the pixels of a display device). Also, Fig. 9 and column 7, lines 47-48 of Shen "voltage sensing circuitry 94 is coupled to the display device 93 to measure the voltage across each image pixels as current IN". Thus, Shen clearly teaches combine the feeback signal (i.e., I_0) from the display with a corrected output signal for forming a new signal (i.e., In+1). (see equation **In+1** = **In** exp[MInΔt/ $\mathbf{I_0\tau_0}$] shown in column 7, line 29). Thus, both Figs. 2 and 9 of Shen show feed back loop based on actual display light emission

Secondly, the limitation " compensating for actual changes in the display **performance over time** is **not recited in the claim**".

Appellant argues that "Shen instead accumulates the drive current sent to the display, and uses the accumulated drive current to modify the initial condition signal IoTo. This is not feedback based on actual display performance sensed by a photosensor". Again, Appellant does not take into consideration column 8, lines 64-68 of Shen (using CCD camera for measuring the light output of the pixels of a display device). Also, Fig. 9 and column 7, lines 47-48 of Shen teaches that "voltage sensing circuitry 94 is coupled to the display device 93 to measure the voltage across each image pixels. The measured signal from each image pixels from the display of Shen is signal based on actual display.

Appellant also argue that "Figs 2 and 3 do not illustrated any signal from the display". However, Figure 9 clearly shows signal V(n)(I(n) from the display (93) (see column 8, lines 64-68). Appellant argues that "there is no signal that goes from the voltage sensor 94 that is combined with an output from the RAM 91". Examiner disagrees with appellant this point of view since Shen clearly teaches signal that goes from the voltage sensor 94 that is combined with an output from the RAM 91 by using the formula $\mathbf{I_{n+1}} = \mathbf{I_n} \exp[M I_n \Delta t / \mathbf{I_0} \tau_0]$

Appellant repeatedly argues that there is no combination with a feedback signal as required in the present invention. If there is no combination with a feedback signal in Shen as Appellant's argument, then there is no need the equation $\mathbf{I_{n+1}} = \mathbf{I_n} \exp[M I_n \Delta t / \mathbf{I_0} \tau_0]$ in Shen. Also there is no need the values $\mathbf{I_0}$, $\mathbf{I_n}$ nor $\mathbf{I_{n+1}}$ in the calculation steps of Shen.

On page 4, second paragraph, Appellant argues that " While Salam may describe various brightness, current, and/or voltage measurement schemes for achieving matched luminance between multiple LED lamps in a display matrix, it simply does not teach or suggest use of a feedback signal converter for converting a measured light output feedback signal to a converted feedback signal having the same from as the code values to which the display is responsive in combination with an update calculator for creating an updated corrected code value by combining the converted feedback signal with a corrected code value as required by the

present claimed invention. At this point, appellant simply argues the reference of Salam, the claims are obvious combination Salam in view of Shen. While Salam may not mention the update calculator as Appellant's arguments, but Shen clearly does.

From last two line of page 4 to first paragraph of page 5, Appellant argues that the term "dynamic controller" combination with the components recited in the claims is an inherent of what appellant repeatedly argues "the compensating for actual changes in the display **performance over time"**. Examiner disagrees with Appellant this point of view because the term "dynamic controller" cannot be interpreted as " **changes in the display performance over time**. The term "dynamic" can be defined as "a change", but does not mean "change display performance over time". If the circuitry can perform the function of change the data from one to another, then this circuitry is called dynamic circuitry. Thus, the limitation " dynamic controller" is not necessary to have function of "changes in the display performance over time " is Appellant's argument. Both circuitry of Salam and Shen clearly teach a circuitry having a function of changing the brightness of the display pixels . Thus, their circuitry is a dynamic controller as broad term. Again, the claims do not specifically recite " a dynamic control having a function of change in **display performance over time**".

On page 5, second paragraph, Appellant simply repeats his arguments that "Shen does not use a dynamic controller", and "there is no feedback loop based on actual display light emissions which enables compensating for actual changes in the display performance over time". First, the limitation " dynamic controller" is not necessary to have function of "changes in the display performance over time " is

Appellant's argument. If both Salam and Shen teach a circuitry having a function of changing the brightness of the display pixels, then their circuitry is a dynamic controller as broad term. The term "dynamic" does not mean "changes in the display performance over time". Secondly, the limitation " compensating for actual changes in the display **performance over time** is **not recited in the claim**". Thirdly, both Fig.2 and Fig.9 of Shen teach the feed back loop which perform the function of correcting the brightness of the display pixels based on the feedback signal (i.e. signal sensed from the display 93 by CCD camera).

In the last response of the office action, Appellant argues that "the correction value in Shen is pre-stored rather than measuring and calculating". After reading the examiner 's analyzing that the correction value in Shen is based measuring and calculating, not pre-stored in the final office action, Appellant now awkwardly argues that Shen still based on a stored preprogrammed function based on expected exponential decay. It is not understood what is Appellant meant "stored programmed function". Any calculator must store basic preprogrammed function so that it can perform the function of calculating. If Appellant's device has calculator as same as Shen does, then both calculators must stored pre-programmed function. As to the argument "based on expected exponential decay", first of all, the claims do not exclude the function of "exponential" taught by Shen. Secondly, the claims do not specifically recite what kind of calculation is performed if not "exponential" calculating. Thirdly, both Shen and Appellant's devices teach that the feed back signal may be a current (see page 4, lines 20-28 of the specification), and both use the feedback signal measured

from the display to feedback loop calculation for calibrating the display pixels which are gradually deterioration (decay). Thus, Shen clearly meets the requirement of an update calculator as recited in the claim.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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